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LATHETICOMYIA, A NEW GENUS OF ACALYPTRATE FLIES OF UNCERTAIN FAMILY RELATIONSHIP

By Marshall R. Wheeler [1]

The new genus *Latheticomyia*, based upon three new species from the mountains of Arizona, Utah, and Nicaragua, presents such an unusual array of characters that its family relationship is quite obscure. At first glance the flies give one the impression of an aberrant *Trigonometopus*, but more careful study suggests the Clusiodidae (Clusiidae) or, perhaps, the Anthomyzidae. However, *Latheticomyia* differs from each of those families in many features that are generally considered critical in family distinctions. For the present it seems best to leave the matter of family relationship in abeyance, but I believe it will ultimately prove necessary to erect a new family for this genus.

Latheticomyia tricolor and *L. lineata* were taken in the summer of 1951 at banana-baited trap cans set out to attract *Drosophila*, and all specimens were captured during late twilight. *L. infumata* is known from three specimens taken by William B. Heed in June 1954 while making collections of Drosophilidae in Nicaragua. The species are evidently quite rare; in all, we have just 17 specimens of the genus, and I have seen no specimens other than those taken by Mr. Heed and myself.

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Latheticomyia, new genus [2]

TYPE SPECIES: *Latheticomyia tricolor*, new species.

Rather slender, medium-sized flies (2.5–4.0 mm.), mostly black with prominent yellow areas on head, mesonotum, scutellum, pleura, and legs.

HEAD: Postvertical bristles convergent, cruciate in *infumata*, less strongly converging in *tricolor* and *lineata;* inner and outer verticals strong, normal in position; occiput flat or a bit concave; ocelli on a small raised prominence, the ocellar bristles strong, proclinate and divergent, their bases within the ocellar triangle; front longitudinally depressed to sunken between the orbits, becoming deeper anteriorly; each orbit with three reclinate orbitals, the anterior one close to antennal base; orbits, between antennae and anterior orbitals, rather thickly haired; mesofrons with small hairs, no bristles.

Antennae somewhat porrect, both basal segments with evident hairs; arista weakly pubescent, inserted dorsally and subapically; face flat and retreating in profile, sunken in the middle, without foveae, and bearing small fine hairs on the upper part between antennae (see species descriptions for quantity and color); one pair of moderately strong vibrissae, the following oral hairs mostly small, the row ending with a prominent buccal bristle; palpi of normal size and shape.

THORAX: Five pairs of dorsocentral bristles of which three are clearly postsutural, one pair is at about the sutural level, and one pair is clearly presutural; prescutellar acrostichal bristles small or absent; acrostichal hairs present; scutellum small and flat, with small scattered hairs on the sides and the disc sparsely haired or bare; six large marginal scutellar bristles, the apical pair largest and cruciate or nearly so. Other bristles are present as follows: 1 propleural (borne on the apex of a short peduncle), 1 humeral, 2 notopleural, 1 presutural (=posthumeral), 2 alar (apparently 1 supra-alar and 1 post-alar), 2 sternopleural; the mesopleura entirely bare.

LEGS: First femur with moderately stout bristles; third femur with a single enlarged bristle at about one-fourth from apex (strongest on *tricolor*); tibiae without evident preapicals, a moderately strong apical on 2d tibia, a weaker one on 3d tibia. In males of *tricolor* the first metatarsus bears an apical thumblike projection on its inner side, absent on females.

WINGS: Venation of the general acalyptrate type; costa reaching 4th vein; costa broken or weakened just beyond humeral crossvein (not always easily seen), and a definite costal incision just before apex of first vein; subcostal (auxiliary) vein strong basally, weaker

[2] *Latheticomyia:* constructed from the Greek *latheticos* (addicted to concealment, that easily conceals itself)+*myia* (a fly); the name is feminine.

apically, bending toward and fusing with the first vein before its apex, the latter somewhat thickened at its union with the costa. Anal cell well developed, the anal vein ceasing abruptly before reaching the wing margin; last section of fifth vein usually failing to reach wing margin, its length a little more than half that of the posterior crossvein. A crossvein between the 2d basal and discal cells absent or only partially indicated as a stub. Wings clear hyaline in *tricolor* and *lineata*, blackish in *infumata*.

Abdomen: Male genitalia large and complex, bent back beneath abdomen (see figures). Female abdomen long and slender, tapering at apex but not clearly telescoped.

Remarks: The immature stages, food, breeding habits, etc., are unknown.

***Latheticomyia tricolor*, new species**

Figures 1,*a–c*; 2,*a*,*b*

Figure 1,*a* shows the general appearance of the male, without color pattern, while figures 2,*a*,*b* represent the color patterns seen from the side and from above.

Male: Face and cheeks pale yellowish white, proboscis, palpi, and clypeus yellow; face with a median furrow from antennae to clypeus, bounded by a semiprominent ridge on each side, with smaller depressed areas lateral to these; upper face, below and between antennal bases, with 0–2 small dark hairs and a few pale ones. Antennae mostly brown on outer side, but yellow on lower apical edge and mostly yellow on the inside except on upper margin and at apex; both inner and outer margins of 2d segment rounded, not pointed; 3d antennal segment subquadrate in shape, thickly covered with fine hair.

Anterior orbital two-thirds length of second and one-half length of third, the latter reclinate and inclined a bit outwardly, the other two only weakly reclinate; orbits pale yellow behind middle orbital and usually without additional hairs, becoming dark brown anteriorly, this area with numerous short, black hairs. The divergent ocellars, convergent postverticals, and divergent outer verticals about as long as middle orbital; inner verticals longer.

Mesonotal dark area (fig. 2,*a*) with thin gray pollen, especially between dorsocentral rows; pale area of scutellum yellow. Of the five pairs of dorsocentrals, the last pair is the largest; no prescutellars; acrostichal hairs irregular, 2-rowed posteriorly, becoming more numerous anteriorly. Scutellar disc with sparse scattered hairs, mostly limited to the dark areas. Humeral callus pronounced, bearing 4–5 black hairs in addition to the single upturned bristle; propleural bristle upturned, arising from a small protruding knob.

Color of legs as in figure 2,*b* but the contrast between light and dark areas (yellow and brownish black) is not always as great as shown. Tarsi of first legs somewhat thickened; first metatarsus with black, long hairs below basally, the joint continued apically as a thumblike flap over the base of the next joint; metatarsal length only a little less than the length of the remaining segments combined.

Abdomen mostly pollinose black, the tergites showing creamy yellow apices, especially the pregenital tergite; all tergites yellow on the extreme lateral margins. There appear to be five pregenital tergites: the first is rather elongate (possibly a fusion of two tergites), the next three are narrower, and the fifth is again larger. The genitalia (fig. 1,*a–c*) nearly equal the rest of the abdomen in size; tergites 6 and 7 (apparently) form the apex of the abdomen, the seventh bent back beneath to nearly the third coxae; the sixth rather shiny black, main portion of seventh dirty yellow, while the apex is darkened again. The single accessory organ (see fig. 1,*a*) is an elongate flap, thin, shallowly concaved along its entire length, the margins and underside bearing numerous, slender, pale to brownish hairs, those of each side near base stouter and longer; this unpaired accessory structure seems to be attached ventrally beneath the fourth and fifth tergites.

The abdomen of one paratype male (deposited in the U. S. National Museum) was removed, treated with sodium hydroxide, cleared in phenol, and studied in glycerine; after the drawings were prepared the genitalia were placed in a drop of glycerine in a microvial and this was attached to the pin bearing the specimen. Figure 1,*b* shows the external features of the genital segments; the anal plates are densely haired; just anterior to the anal plates, middorsally, is a depressed area (shown in the figure by stippling); the approximate position of tergite 5 is shown in dotted outline.

In figure 1,*c* are shown most of the internal structures visible in the cleared specimen; parts labeled B and C (ejaculatory apodeme?) are unpaired, B being quite dark in color. Part A (apodeme of the penis?) is bifurcate at the point indicated by the label line into a right and left branch (only one branch is shown), each of which bears the two processes shown in the figure.

Wings clear, the venation generally as in figure 1,*a;* on the costal base, dorsally, arises a rather long bristle reaching well beyond the humeral crossvein; ventrally, a smaller bristle arises nearly opposite the large one.

Body length (in pinned specimen), 2.5–3.0 mm.; wing, about 2.5 mm.

Female: With the general appearance of the male but the abdomen is longer and more slender. First tergite long, second much shorter, with the following three consecutively larger; sixth tergite elongate,

tapering to its apex. There are no visible cerci protruding. The front metatarsus of the female lacks the thumblike extension of the male, and the upper facial hairs tend to be more numerous (usually 8–10 in number) though many of them are pale and hard to see. The body length is up to 4.0 mm. in a specimen with the abdomen extended.

Types: Holotype male, USNM 62897, Rustler Park Campground, Chiricahua Mountains, Coronado National Forest, Ariz., June 11, 1951. Paratypes as follows: 2 males, 1 female, from the type locality;

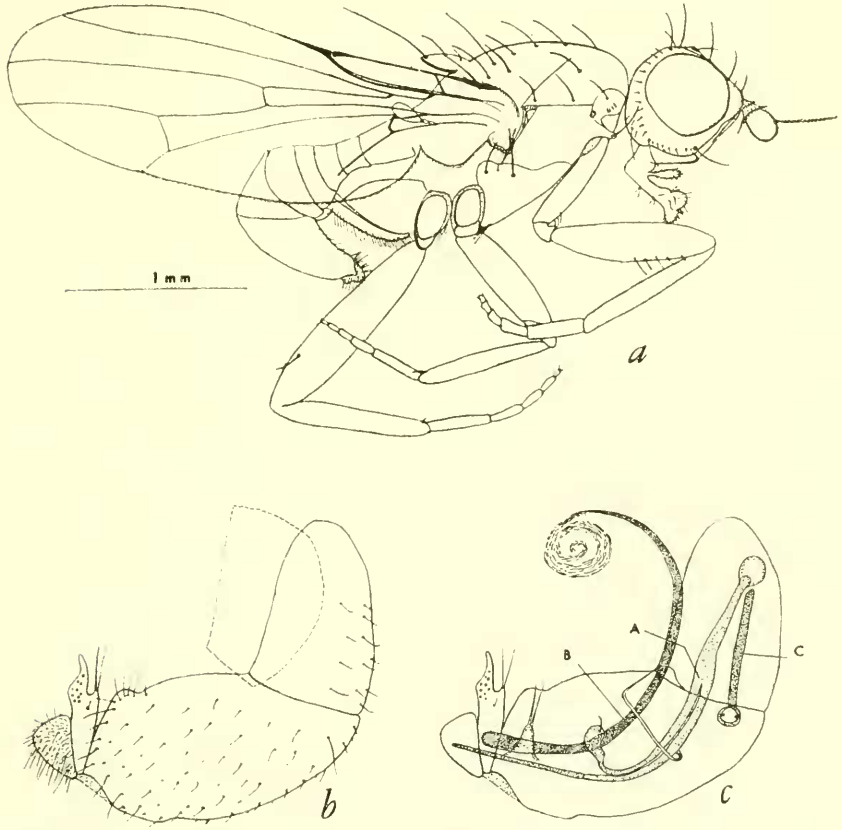

Figure 1.—*Latheticomyia tricolor: a*, holotype male, lateral view; *b*, male genital segments, external features; *c*, same, internal structures drawn from cleared specimen.

2 males, Mingus Mountain Recreation Area, Prescott National Forest, Ariz., June 20, 1951; 1 female, Ramsey Canyon, Huachuca Mountains, Ariz., June 15, 1951; 1 female, Horse Thief Basin Recreation Area, Prescott National Forest, Ariz., June 18, 1951; 1 female, Clover Springs, near Long Valley, Coconino National Forest, Ariz., June 22, 1951; 1 male, near Long Valley Junction, Dixie National Forest, Utah, Aug. 18, 1953 (W. B. Heed, collector). Two paratypes

are being placed in the U. S. National Museum collection and one each in the collections of A. H. Sturtevant and George Steyskal; the remainder are in the author's collection.

Latheticomyia lineata, new species

FIGURE 2,*c*,*d*

MALE AND FEMALE: Face tan in middle, whitish on facial orbits, cheeks whitish becoming tan behind and below, that portion below the row of oral hairs tan to brown and conspicuously shining; vibrissa single, thin, followed by an irregular row of 8–10 hairs ending with the buccal bristle; tiny hairs of upper face scarcely visible on the only male due to a partial collapse of the head, but on the females there are 10–15 black hairs, easily visible. Clypeus tan to brown, narrow; palpi tan with coarse black hairs; proboscis pale.

Front with color pattern as in figure 2,*c*; orbits whitish yellow to just beyond middle orbital, this yellow area continuing broadly onto rear of head on each side; dark part of front burnt brown in color with the postlunular area more orange and beset with small scattered hairs. Antennae mostly brown, becoming pale yellowish only on lower inner surface; arista dark, microscopically pubescent. Anterior orbital bristle about two-thirds the length of the other two.

The color pattern of the mesonotum is shown in figure 2,*c*, but in general the contrast between light and dark areas is not so striking as in *tricolor* and *infumata;* similarly, in figure 2,*d*, the contrast of colors on the legs is not as extreme as shown. The dark areas of the mesonotum are brownish with thin pollinosity, with the median yellow area continued anteriorly along the dorsocentral lines to a varying degree, only rarely reaching the humeral yellow area. The pale streak between the alar and dorsocentral bristles may also be largely obliterated.

Scutellum mostly yellow, the brown being limited to the basal angles; disc with scattered black hairs; basal scutellars two-thirds the length of second pair, the latter about one-third the length of the apical pair. Acrostichal hairs irregularly 4–6 rowed at the sutural level, reduced to two rows on the yellow area posteriorly, the prescutellar pair only a little enlarged. Prescutellar dorsocentrals noticeably larger than the four anterior ones. Halteres yellow.

Abdominal tergites dark brown with their apical margins creamy yellow. In the only male the genitalia are obscured by the legs but appear to be of the same general type as in *tricolor*.

Body length of female (abdomen extended), 3.5 mm.; wing, 2.8 mm.

TYPES: Holotype female, USNM 62898, Horse Thief Basin Recreation Area, Prescott National Forest, about 25 miles south (airline) of Prescott, Ariz., June 18, 1951. Paratypes as follows: 1 female, Oak

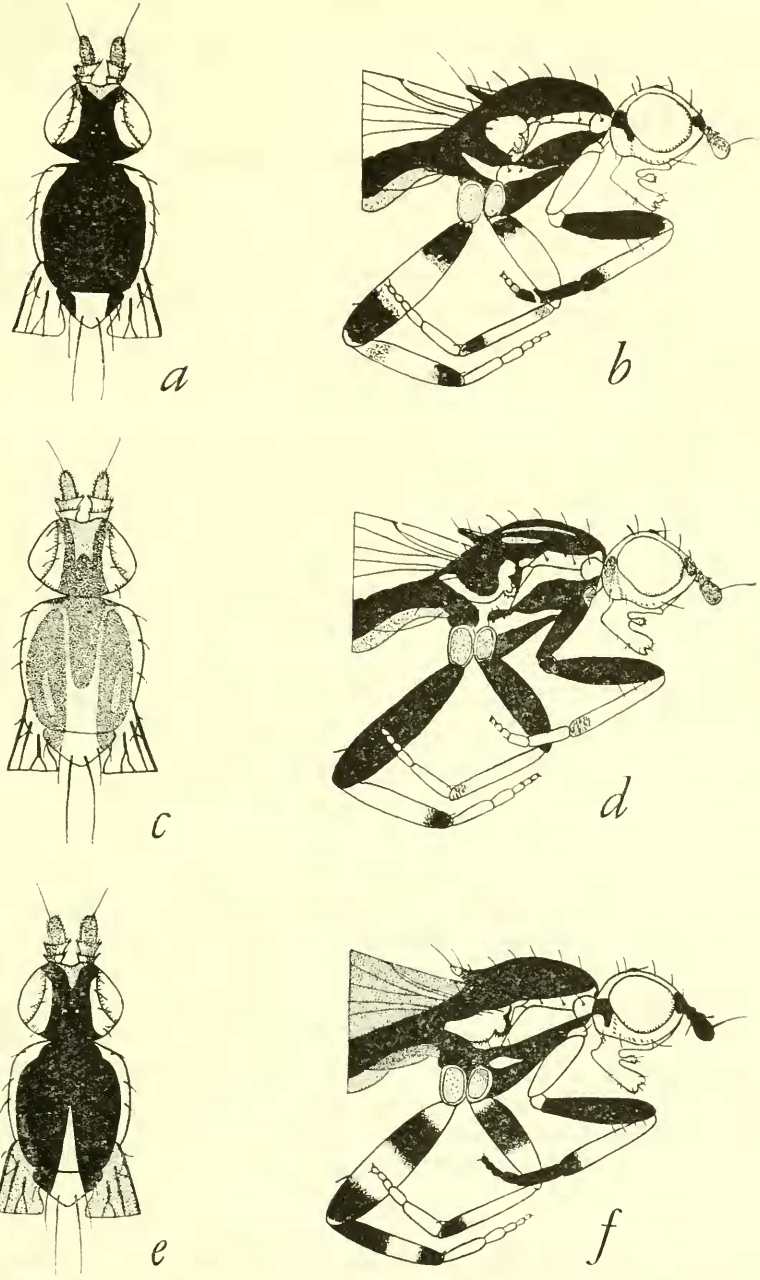

FIGURE 2.—Color patterns of: *a*, *Latheticomyia tricolor*, dorsal view; *b*, same, lateral view; *c*, *L. lineata*, dorsal view; *d*, same, lateral view; *e*, *L. infumata*, dorsal view; *f*, same, lateral view.

Creek Canyon, Coconino National Forest, Ariz., June 21, 1951; 1 female, Madera Canyon, Coronado National Forest, Ariz., June 16, 1951; 1 female, Patagonia, Ariz., June 15, 1951. All paratypes are in the author's collection.

Latheticomyia infumata, new species

FIGURE 2,*e,f*

FEMALE: Face, cheek, clypeus, palpi, and proboscis pale whitish yellow; upper face with numerous (20 or more) small black hairs extending from lunule nearly halfway to oral margin; palpi with scattered black hairs and bristles; behind the center of the eye is a large brown area coinciding in position with the prominent brown pleural stripe.

Color pattern of front as in figure 2,*e*, the orbits creamy yellow up to the middle orbital, the postlunular triangular area more orange. All antennal segments black on upper and outer surfaces, pale yellow on lower and inner surfaces except that the apical third of inner side of third segment is also black; arista micropubescent, black, its basal joint large, inserted at about one-third from apex dorsally; anterior orbital two-thirds the length of middle one, the latter five-sixths the length of the posterior one.

Color pattern of mesonotum, pleura, and legs as in figure 2,e,f; acrostichal hairs sparse, irregular, the two median rows diverging along the edges of the triangular yellow stripe, the last hair in each row tending to be a bit enlarged. Apical scutellars nearly four times the length of the other two. Halteres yellow. Wings uniformly blackened, a bit darker over the crossveins.

Tergites subshining brownish black dorsally, the last two with some degree of yellow apical margins; all tergites yellow on lateral margins.

Body length (abdomen extended), 4.0 mm.; wing, 3.3 mm.

TYPES: Holotype female, USNM 62899, Santa María de Ostuma, north of Matagalpa, Nicaragua, June 1954, W. B. Heed collector. There are two paratype females with the same collection data (author's collection). Mr. Heed states that his collections were made mostly on a coffee finca on the western slope of the mountains at an elevation of about 4,000 feet; above the finca was a dense cloud forest and below it the forest was mostly pine.

DISCUSSION

Several years have been spent in an attempt to determine the family affinities of *Latheticomyia*, but it now seems fairly obvious that the particular combination of characters present in these flies does not occur in any described family. On general appearance, a

relationship with the Trigonometopidae would seem to be a possibility, while on the basis of general morphological features the Clusiodidae (Clusiidae) or the Anthomyzidae are suggested. Since some dipterists consider that the Clusiodidae-Opomyzidae-Anthomyzidae form a related group, the fact that *Latheticomyia* shows similarities to both the clusiids and anthomyzids may be significant.

Trigonometopidae: On superficial examination *Latheticomyia* bears a certain likeness to *Trigonometopus*, which has, in the past, been variously referred to the Lauxaniidae, Otitidae, Sciomyzidae, and Clusiodidae. In *Trigonometopus*, however, vibrissae are absent, the subcosta is complete and ends independently in the costa, there are no visible costal breaks, the presutural bristle is absent, and the mesopleura always has at least one bristle. None of the described species has a striking body color pattern as in our flies, and most have highly marked wings. In actual fact, therefore, there seems to be little phylogenetic relationship between the two.

Anthomyzidae: *Latheticomyia* bears some resemblance to species of *Anthomyza*, but the resemblances are not very compelling. The arrangement of orbital bristles is similar, the facial structure, vibrissa, oral hairs, bare mesopleura, and distal costal break are all rather alike. In *Anthomyza*, however, there are no presutural dorsocentrals, there are never more than four scutellars, the scutellar disc is always bare, the ocellars are parallel and arise outside the ocellar triangle, the antennae are not at all porrect, the arista is basal, a humeral weakening of the costa is not evident, and the first femur nearly always bears a stout thornlike spine. Since there are still other dissimilar features, it does not seem likely that *Latheticomyia* should be considered as an aberrant anthomyzid.

Clusiodidae (Clusiidae): One of the most remarkable features of the clusiids is the great diversity in chaetotaxy, a fact which makes any characterization of the family most difficult. Thus *Latheticomyia* might possibly be forced into this family on the grounds that still greater diversity in bristle patterns is not too unexpected.

Many features of *Latheticomyia* are to be found somewhere among the clusiids: the arista is essentially clusiidlike, the arrangement of orbitals occurs in *Acartophthalmus*, six strong scutellar bristles are present in some species of *Clusia* and *Clusiodes*, presutural dorsocentrals occur in some species of *Clusiodes*, and a humeral costal break is present in *Acartophthalmus* while a distal costal break is characteristic of the other genera. In its gross appearance *Latheticomyia* bears only a weak resemblance to any clusiid; however, *Acartophthalmus*, long considered a clusiid, also bears little resemblance to other members of the family.

If one is inclined to emphasize the direction of the postvertical bristles, as is customary in making family distinctions among the Acalyptratae, then *Latheticomyia* cannot possibly be placed among the Clusiodidae. Further evidence for its separation comes from the bare mesopleura, two costal breaks, five pairs of dorsocentrals, longitudinally excavated front, minute hairs on upper face, etc.

Acartophthalmus might, with considerable justification, be removed from the Clusiodidae. Its general appearance is not that of a clusiid, the arista is clearly inserted basally, the vibrissae are scarcely larger than the following oral hairs, the humeral costal break occurs nowhere else in the family, while the distal costal break, found in all other clusiids, is lacking here. In addition, the large, widely spaced postverticals, the widely separated apices of the auxiliary and first longitudinal veins, and the three simple reclinate orbitals represent features which are not approached elsewhere in the family as far as I have been able to determine. Thus, should *Acartophthalmus* be removed from the family, at least two features of *Latheticomyia* listed above as indicative of a possible relationship to that family would then be eliminated.

Continued discussion of a possible clusiid relationship seems unnecessary. The following brief list of the essentially nonclusiid characters will serve to emphasize the disparities: (1) gross appearance, including pigmentation patterns; (2) convergent postvertical bristles; (3) twice broken costal vein; (4) dorsocentrals in three postsutural and two presutural pairs; (5) bare mesopleura; (6) longitudinally excavated front.

Of the above characteristics, the last five are all deemed of considerable importance in family distinctions. It is my opinion that the disparities noted above are too great, and that the inclusion of *Latheticomyia* in the Clusiodidae is not justified.

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